



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/801,329	03/15/2004	Nadim Y. Abdo	MS1-1785US	1950

22801 7590 10/15/2010
LEE & HAYES, PLLC
601 W. RIVERSIDE AVENUE
SUITE 1400
SPOKANE, WA 99201

EXAMINER

PEREZ, CARLOS R

ART UNIT	PAPER NUMBER
----------	--------------

2444

NOTIFICATION DATE	DELIVERY MODE
-------------------	---------------

10/15/2010

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

lhptoms@leehayes.com

Office Action Summary	Application No. 10/801,329	Applicant(s) ABDO ET AL.	
	Examiner CARLOS R. PEREZ TORO	Art Unit 2444	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 July 2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) 1-19,23-27,29-38 and 40-46 is/are pending in the application.
- 4a) Of the above claim(s) 12-19,23-27,29-38 and 40-46 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This communication is in response to applicant's amendment filed under CFR 1.111 on 7/28/2010 to non-final office action. Claims 20-22 have been cancelled. Claims 12-19, 23-27, 29-38 and 40-46 are withdrawn as directed to a non-elected invention. Claims 1-11 remain pending.

Response to Arguments

2. Applicant's arguments filed 1/21/2010 (hereinafter "Remarks") have been fully considered but they are not persuasive.

3. Applicant argues that Whiting-Vidal fails to expressly disclose:

"further compressing the compressed data by encoding the at least one representation that includes the length and the location of the matching sequence, the at least one representation being encoded using a first Huffman table for encoding the length using Huffman encoding;

using a last recently used (LRU) table for encoding the location of the matching sequence in the history buffer, the LRU table listing a plurality of recently used locations of recent matching sequences;

when the location of the matching sequence is not in the LRU table, encoding the location of the matching sequence with Huffman encoding using a second Huffman table, different from the first Huffman table." Remarks, p. 27.

4. 35 U.S.C. § 103 precludes patentability when "the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the to which said subject matter pertains." *KSR Intl' Co. v. Teleflex Inc.*, 550 U.S. 398, 405 (2007). A person of ordinary skill in the art is also a person of ordinary creativity, not an automaton." *Id.* "[I]n many cases a person of ordinary skill will be able to fit the teachings of multiple patents together like pieces of a puzzle." *Id.* Office personnel may also take into account "the inferences and creative steps that a person of ordinary skill in the art would employ." *Id.*

Art Unit: 2444

5. Vidal teaches compressing a block of data using various combinations of algorithms. Vidal 0042. The algorithms used include Huffman encoding. Vidal 0041. Vidal's teachings would reasonably suggest to one of ordinary skill in the art that Whiting teaches using a look aside buffer to enhance processing by maintaining bytes of a currently matching string. Whiting col 15/ln 14-24. One of ordinary skill in the art would be motivated to combine the teachings of Vidal and Whiting in order to achieve higher compression and higher efficiency in matching sequences. Vidal 0042, Whiting col 15/ln 17-21.

6. For the above stated reasons, the rejection is maintained.

Election/Restrictions

7. Applicant's election with traverse of Group I in the reply filed on 7/28/2010 is acknowledged. The traversal is on the ground(s) that Groups I, II and IV do not overlap in scope. This is not found persuasive because even after Applicant's amendments the claims in Groups II and IV still do not overlap in scope.

8. Group II is usable in implementing a compression algorithm by "adding data to a history buffer" and maintaining a pointer in the history buffer. Group IV is usable in implementing a compression algorithm using "tuning parameters," "determining available resources" and "periodically recomputing Huffman tables." Accordingly, the groups do not overlap with Group I and require search in subclass 709/247.

9. The requirement is still deemed proper and is therefore made FINAL.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and

Art Unit: 2444

the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 1-11 rejected under 35 U.S.C. 103(a) as being unpatentable over Whiting et al. (US 5,146,221) (hereinafter Whiting) in view of Vidal et al. (US 2002/0078241) (hereinafter Vidal).

12. Regarding claim 1, Whiting teaches a method of streaming data over a network from a first device to a second device, the method comprising:

compressing the data at the first device by finding an index in a lookup (hash) table that matches an initial sequence in the data (Whiting col 9/ln 42-44; col 10/ln 57-58), wherein:

the lookup table comprising a plurality of (bin) entries, each said entry being discoverable utilizing a particular one of a plurality of said (hash value) indices (Whiting col 10/ln 58-60); and

each said entry referencing whether a corresponding said index is located in a history buffer, and if so, further references (in a hash link table) one or more locations (array pointers) of the corresponding said index in the history buffer (Whiting col 10/ln 58-67); and

when the corresponding said entry of the matching index references a plurality of said locations (Whiting col 9/ln 59):

for each said location, comparing a sequence at the location having the matching index with a sequence in the data, said sequence including the initial sequence (Whiting col 9/ln 49-65);

deriving a matching sequence from the comparison based on at least one of a length and the location of the sequence at each said location (Whiting col 5/ln 61-62);

Art Unit: 2444

representing the matching sequence using a representation that includes the length and the location of the matching sequence in the history buffer (Whiting col 5/ln 66-68); and
forming compressed data that includes at least one of said representations (Whiting col 5/ln 61-62).

Whiting does not explicitly teach further compressing the compressed data.

However in the same field of invention, Vidal teaches using a combination of compression algorithms including:

further compressing the compressed data by encoding the at least one representation that includes the length and the location of the matching sequence, the at least one representation is encoded using a first Huffman table for encoding the length using Huffman (Vidal 0041) encoding

using a last recently used (LRU) table for encoding the location of the matching sequence in the history buffer, the LRU table listing a plurality of recently used locations of recent matching sequences (Whiting col 15/ln 11-24),

when the location of the matching sequence is not in the LRU table (cache miss), encoding the location of the matching sequence with Huffman encoding using a second Huffman table, different from the first Huffman table (Vidal 0042) (through the idea of trying a combination of algorithms); and
streaming the compressed data over the network to the second device (Vidal 0002).

At the time the invention was made, given the teachings for compressing data by matching sequence of data to be compressed with a sequence of data in a history buffer, the teachings of Vidal for using a combination of compression algorithms would have been obvious. One of ordinary skill in the art would be motivated to compress data multiple times with various algorithms in order to achieve a higher compression ratio (Vidal 0042).

13. Regarding claim 2, Whiting-Vidal teaches:
the forming compressed data includes finding one said index in the lookup table for each said sequence in the data (Whiting col 10/ln 58-67).
14. Regarding claim 3, Whiting-Vidal teaches the corresponding said entry of the matching index references a hash chain (hash link table) which includes each said location of the matching index in the history buffer (Whiting col 10/ln 58-67).
15. Regarding claim 4, Whiting-Vidal teaches the initial sequence and the index are each composed of at least two bytes (Whiting col 9/ln 58-61).
16. Regarding claim 5, Whiting-Vidal teaches:
streaming the compressed data over a network, wherein the data is formatted as one or more packets and the packets are compressed for transmission over the network so that the compressing is performed on a per-packet basis (Vidal 0047).
17. Regarding claim 6, Whiting-Vidal teaches:
using the second Huffman table to also compress literal sequences that have no matching index in the history buffer (Vidal 0047); and
streaming the compressed literal sequences to the second device (Vidal 0002).
18. Regarding claim 7, Whiting-Vidal teaches:
determining that the corresponding said entry of the matching index references a single said location:
comparing a sequence at the single said location having the matching index with the sequence in the data (Whiting col 9/ln 49-65);
deriving a matching sequence from the comparison based on at least one of a length and the location of the sequence at the single said location (Whiting col 5/ln 61-62); and

representing the matching sequence using a representation that includes the length and the single said location of the matching sequence in the history buffer (Whiting col 5/ln 66-68); and
when each said sequence of the data is represented or encoded, streaming the data having the encoding or the representation (Whiting col 2/ln 1-11).

19. Regarding claim 8, Whiting-Vidal teaches the comparison to derive the matching sequence is performed utilizing one or more thresholds selected from the group consisting of:

a number of said locations having the matching index to be compared (MAXHCNT) (Whiting col 14/ln 19-21);

a size of a value that describes each said location having the matching index (MEMSIZE) (Whiting col 10/ln 21-24); and

a size of a value that describes a length of the sequence at each said location that matches the sequence in the data that includes the matching index (MAXSTR) (Whiting col 11/ln 6-7).

20. Regarding claim 9, Whiting-Vidal teaches employing a cost function (compare size) to determine if the representation utilizes less memory when stored than the matching sequence, and if so, forming compressed data that includes the representation (Whiting col 5/ln 28-34).

21. Regarding claim 10, Whiting-Vidal teaches determining whether the location of the matching sequence matches one of a plurality of locations in the LRU table (look aside buffer) (Whiting col 15/ln 17-25), wherein:

each said location in the LRU table has a corresponding said LRU representation (Whiting col 15/ln 17-25);

each said location in the LRU table describes one of a plurality of last recently used locations of sequences in previously streamed data (Whiting col 15/ln 17-25); and

if the location of the matching sequence is included in the LRU table, the location of the matching sequence is encoded with a corresponding said LRU representation from the LRU table (Whiting col 15/ln 17-25).

22. Regarding claim 11, Whiting-Vidal teaches one or more computer-readable storage media storing computer-executable instructions that, when executed, perform the method as recited in claim 1 (Whiting Fig 1).

Conclusion

23. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

24. Any inquiry concerning this communication or earlier communications from the examiner should be directed to CARLOS R. PEREZ TORO whose telephone number is (571) 270-5649. The examiner can normally be reached on Monday-Friday 8:00am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William Vaughn can be reached on 571-272-3922. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2444

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/C. R. P./

Examiner, Art Unit 2444

/William C. Vaughn, Jr./

Supervisory Patent Examiner, Art Unit 2444